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EXAMINER

TRINH, THANH TRUC

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/688,596	Applicant(s) TORRES ET AL.	
	Examiner Thanh-Truc Trinh	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/22/2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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1. Claims 1-4, 9-11 and 13 -15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuto et al. (US Patent 6471816) in view of Csakvari (US Patent 3243862) .

As seen in Figures 1-6, Shuto et al disclose a sealed electric power generating product including a base plate (10); a power generating film laminated (21) over the base plate; at least one contact portion (22) for contacting at least one pole (20a or 20c) of the power generating film; an electric conductor (lead wire 30 and solder material) going through a blind hole (28) between the internal side of the base plate and the contact portion, the electric conductor is electrically connected with the contact portion; a sealing material (27 and 25) applied at an outer side of the blind hole (28), wherein the electric conductor (lead wire 30 and solder material) is provided through the sealing material to the contact portion. The blind hole is a hole perforated through the base plate after the lamination of the power generating film over the base plate. The blind hole has lateral sides being even. (See Figures 1-6, col. 3 lines 44-67, col. 4 lines 1-68, col. 5 lines 1-42). Shuto et al. also teach the metal foil 22 can be cut slightly into (See col. 5 lines 8-10), thereby giving the metal foil 22 (or the contact portion) an even surface.

Regarding claim 2, Shuto et al. describe the contact portion (or metal foil 22) is provided on the upper side of the generating film 21 opposite the base plate, and the blind hole 28 traverses the base plate and the generating film. (See Figures 5b and 6)

Regarding claims 3 and 4, Shuto et al describe that the metal foils 22 are positioned above output terminals 20a and 20c, then attached under pressure and heat

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to electrically connect. (See col. 4 lines 12-21). Conductive paste output terminals are typically made of binding materials, such as polyimide or phenol based binders, and powder metals such as nickel, silver or aluminum (See col. 7 lines 24-26). Additionally, conductive paste output terminals run substantially the full length and on the right and left sides of the solar cells 11a, 11b, 11c. In other words, metallic bands of combination of output terminals and metal foils run substantially full length and on opposite sides of the power generating film. (See Fig. 1a, 2a, 3a, 4a, 5a). At least a lead wire 30 is solder attached to the metal foil 22 through the hole 28 on one side of the power generating film, therefore at least two lead wires (or electric conductors) go through two blind holes for connecting each metallic band. (See Fig. 5a-6 and col. 5 lines 40-43)

Regarding claim 9, Shuto et al disclose a power generating film 21 comprising a plurality of solar battery elements 11a, 11b, 11c. (See Fig. 2a and col. 3 lines 50-52, col. 3 lines 65-66 and col. 4 lines 1-4). In each element, there is at least one silicon layer. These silicon layers are on top of other flexible films such as transparent conductive layer, and on the substrate 10 that is made of polyimide.

Regarding claim 10, Shuto et al teach that transparent protective films 24 and 25 encapsulate over the solar module 1 (or photovoltaic cell) on the front and back, respectively. (See col. 4 lines 38-42). The encapsulation layers are made of organic materials such as ethylene terephthalate (PET) or fluoroplastics. (See col. 4 lines 42-43).

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Regarding claim 13, Shuto et al. describe the electric conductor (30) is electrically connected with the contact portion via a weld (or solder). (See Figure 6 and col. 5 lines 40-43)

Regarding claim 15, Shuto et al. describe the contact portions (or metal foils 22) are cover with solder platings. (See col. 4 lines 19-23). The solder platings are inherently made of metal. Therefore, the contact portions are locally reinforced with a supplementary layer of metal.

Shuto et al. do not teach the electric conductor being connected to the uneven surface using a weld.

With respect to claims 1 and 11, Csakvari teaches the electric conductor (10) being connected to the uneven surface (conical surface of aperture 7) using a weld. (See Figures 1-2 and col. 1 line 12-48 and col. 2 lines 35-36)

With respect to claim 14, Csakvari teaches the bottom surface of aperture (7), or blind hole is a conical shape. (See Figures 1-2 and col. 1 line 12-48 and col. 2 lines 35-36)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify to product of Shuto et al. by connecting the electric conductor to a conical surface using a weld as taught by Csakvari, because it would provide a contact without deleterious effect on the semiconductor layer. (See col. 2 lines 12-17)

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2. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuto et al in view Csakvari and further in view of of Nagao et al (US Patent No.6670541).

Regarding claims 5-8, Shuto et al and Csakvari disclose solar cell modules as described in claim 1.

Neither Shuto et al nor Csakvari teaches the base plate is rigid, nor do they teach that the plate comprises one insulator between two layers of metal. Shuto et al and Csakvari also do not teach that the base plate is specifically suitable for covering external building walls.

Nagao et al teach the plate (or back cover) is rigid, possibly made of metal or formed by sandwiching a film between metal layers such as aluminum foils. (See col. 5 lines 53-55). In addition, the plate is suitable for covering external building walls. (See col. 1 lines 7-8, and Fig. 11, 13A-D, 14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Shuto et al and Csakvari by applying a rigid base plate comprising an insulator layer between two layers of metal as taught by Nagao et al, because it would provide a superior and effective photovoltaic back over in protecting, reinforcing and preventing hazards from environment. (See Nagao et al, col. 5 lines 49-61).

3. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shuto et al. in view of Csakvari and further in view of Mimura et al. (US Patent 6182403).

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Regarding claim 16, Shuto et al. and Csakvari disclose a sealed electric power generating product as described in claim 1 with a plurality of blind holes.

Neither Shuto et al. nor Csakvari teaches using a plurality of junction boxes, wherein each one of the junction boxes is mounted over a corresponding one of the blind holes.

Mimura et al. et al. teach using a plurality of junction boxes 405, wherein each one of the junction boxes is mounted over a corresponding hole 406 with output lead 407. (See Figure 4 and col. 9 lines 45-54)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the product of Shuto et al. and Csakvari by using a plurality of junctions boxes with each mounted over a corresponding blind hole as taught by Mimura et al., because it would provide cover for the blind hole and housing terminal for drawing power out of the product. (See col. 9 lines 45-54 of Mimura et al.)

4. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuto et al. (US Patent 6471816) in view of Csakvari (US Patent 3243862).

As seen in Figures 1-6, Shuto et al. describe a sealed electric power generating product including a base plate (10); a power generating film (21) laminated over the base plate; at least one contact portion (22) for contacting at least one pole (20a or 20c) of the power generating film; an electric conductor (lead wire 30 and the solder material) going through a blind hole (28) between the internal side of the blind hole and the contact portion, the electric conductor being electrically connected with the contact

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portion and the blind hole having substantially even sides; a sealing material (27 and 25) applied at an outer side of the base plate for sealing the blind hole, wherein the electric conductor is provided through the sealing material to the contact portion at the weld.

Regarding claims 18, Shuto et al disclose a power generating film 21 comprising a plurality of solar battery elements 11a, 11b, 11c. (See Fig. 2a and col. 3 lines 50-52, col. 3 lines 65-66 and col. 4 lines 1-4). In each element, there is at least one silicon layer. These silicon layers are on top of other flexible films such as transparent conductive layer, and on the substrate 10 that is made of polyimide.

Regarding claim 19, Shuto et al. disclose a transparent encapsulation layer 24 over the power generating film. The encapsulation layer is made of an organic material. (See Figure 4b, 5b, 6 and col. 4 lines 38-55).

Shuto et al. do not teach the electric conductor being connected to the contact portion via a weld, and the blind hole having a bottom with a conical shape for receiving the electric conductor with a weld.

With respect to claim 17, Csakvari teaches an electrical conductor lead (10) being connected to the contact portion (2) via a weld, and the blind hole (or aperture 7) having a bottom with a conical shape for receiving the electrical conductor with weld. (See Figures 1-2 and col. 1 line 12-48 and col. 2 lines 35-36)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify to product of Shuto et al. by connecting the electric conductor to an uneven surface using a weld as taught by Csakvari, because it would

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provide a contact without deleterious effect on the semiconductor layer. (See col. 2 lines 12-17)

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shuto et al. in view of Csakvari and further in view of Mimura et al. (US Patent 6182403).

Regarding claim 20, Shuto et al. and Csakvari disclose a sealed electric power generating product as described in claim 17, wherein the product comprises a plurality of blind holes (See Figures 1-6):

Neither Shuto et al. nor Csakvari teaches comprising a plurality of junction boxes, wherein each junction box is mounted over a corresponding blind hole.

Mimura et al. et al. teach using a plurality of junction boxes 405, wherein each one of the junction boxes is mounted over a corresponding hole 406 with output lead 407. (See Figure 4 and col. 9 lines 45-54)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the product of Shuto et al. and Csakvari by using a plurality of junctions boxes with each mounted over a corresponding blind hole as taught by Mimura et al., because it would provide cover for the blind hole and housing terminal for drawing power out of the product. (See col. 9 lines 45-54 of Mimura et al.)

Response to Arguments

Applicant's arguments filed August 22, 2007 have been fully considered but they are not persuasive.

Applicant argues that the reference to Shuto et al. does not teach "a sealing material applied at an outer side of the blind hole, wherein the electric conductor is provided through said sealing material to said contact portion". The Examiner respectfully disagrees. As seen in the rejection above, the Examiner takes position that the sealing material includes layers 25 and 27, which is clearly applied at an outer side of the blind hole as shown in Figure 6. The Examiner also takes position that the electric conductor includes the conductive solder material and lead wire 30. Again, the electric conductor of solder material and lead wire 30 is clearly provided through the sealing material (25 and 27) to the contact portion (22).

Applicant also argues that nothing in the reference teaches any uneven surface at the contact portion, and that cutting slightly into the contact portion is undesirable because the "metal foil 22" is very thin. The Examiner replies that as seen in col. 5 lines 8-10, Shuto et al. state that "The stroke of the cutter is adjusted so that the tip of the cutter blade reaches, and cut slightly into the metal foil 22 during the cut-out operation". Further, Shuto et al. teach the metal foil 22 is 140 μ m thick, and the stroke of the cutter can be adjusted in increments of approximately 10 μ m, thereby reducing the chance of the cutter pierces through the metal foil 22 or cut a slight degree into the metal foil. However, even a little dent or mark that the cutter makes on the surface of metal foil 22 still gives an uneven surface to the metal foil 22.

Applicant further argues that none of the references teach limitations "sealing material applied at an outer side of the blind hole for sealing said blind hole, wherein said electric conductor is provided through said sealing material to said contact portion

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at said weld" and "said blind hole having a bottom with a conical shape for receiving said electric conductor with said weld." The Examiner replies that Shuto et al. still teach the limitation "sealing material applied at an outer side of the blind hole for sealing said blind hole, wherein said electric conductor is provided through said sealing material to said contact portion" as explained above. Csakvari teaches an electric conductor (10) is provided through a hole (7) to a contact portion (2) at a weld and the hole has a bottom with a conical shape for receiving the electric conductor (1) with the weld. (See Figures 1-2 and col. 1 line 12-48 and col. 2 lines 35-36)

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Truc Trinh whose telephone number is 571-272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT
09/28/2007



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